US Army Corps
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Missouri River Division

Missouri River User's Manual Sediment Transport Program ODSET

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FOREWORD

The Omaha District Sediment Transport Package, ODSET has been developed as an extension to the discussions on sediment transport analysis presented in MRD Sediment Series Report No. 19. It's objective is to analysis at-station sedimentation data obtained from the Missouri River. These data include: point-integrated (PI), depth-integrated (DI) and combined PI-DI suspended load data coded in the formats usually used within the District.

Program package ODSET is written in FORTRAN IV language. it is self-contained and its source deck is available as a permanent indirect access file on the Boeing Computer Service (BCS), EKS-1 system. A FTN-compiled object code version, BODEST is also available as a permanent indirect access file on the same system

This manual is written for readers, who have a working knowledge of the Cybernet system at BCS and who at least understand the objectives of sediment transport computations. A mastery of the current (1981) understanding of sediment transport mechanics is not required to use ODSET. However, a familiarity with the subject is needed to interpret the results generated by the package. A more comprehensive Programmer's Manual, which provides a complete listing and an explanation of programs used in ODSET is also available. Readers desirous of adapting ODSET to other special purpose analysis or to similar data coded in different heirarchy and formats should consult that document.

In ODSET, the PI-data are analyzed to compute the suspended sediment load at the sampling verticals and in the channel section. Suspended sediment concentration and velocity profiles are numerically fitted to the measured point data and the product of the two profiles is integrated through the depth of flow

at the verticals. The suspended load in the cross section is then computed by numerical integration of vertical-wise load across the channel width. A separate analysis of PI-data is also made to compute the Analytical Depth Integrated (ADI) samples, for comparison with physically measured DI-samples and to obtain an alternate evaluation of suspended load through the Modified Einsten Procedure (MEP). The DI-data are also analyzed by MEP. This is done for individual verticals and for composited data in the cross section. A special version of MEP was developed for use in ODSET. This version is designed to provide improved numerical accuracy and to reduce the effect of field measurement errors on the final results. ODSET, also has the capability to compute the sediment load in channels by one or more of several recognized methods presented in detail in MRD Sediment Series Report No. 19.

In ODSET, one user specified composited bed material size distribution is used for each measurement run. This is necessary because bed material samples are generally not available, a large part of variation from one sample to another is related to the variation in bed material size across a measuement section is significant and the user desires to base the analysis on local bed material, it can be done by treating each vertical (or channel segment) as a separate measuement run.

This manual is organized in four parts and one appendix. Part I, describes highlights of ODSET including the options available to the user. Part II, explains the method of preparing input data files in conformity with the Omeha District formats. Part III, describes the use of system control statements for remote batch submission and part IV contains examples of data input and computer printout for different types of data. A glossary of sedimentation terms used in this manual is provided in the Appendix.